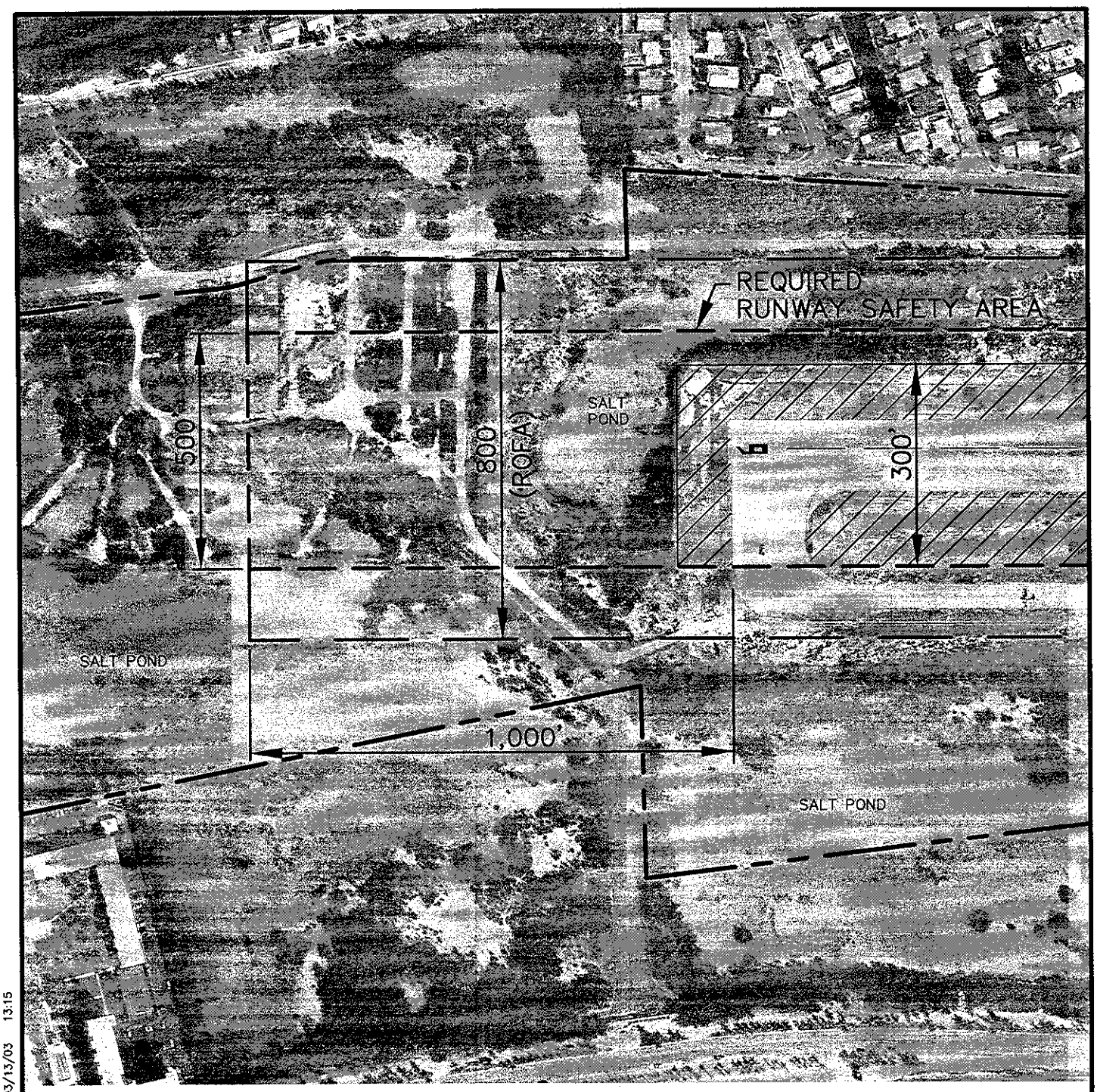

LEGEND

- AIRPORT PROPERTY LINE
- REQUIRED RUNWAY SAFETY AREA (RSA)
- REQUIRED RUNWAY OBJECT FREE AREA (ROFA)
- EXISTING RUNWAY SAFETY AREA

N

300 0 300

GRAPHIC SCALE IN FEET

Key West International Airport
RSA Feasibility Study

RUNWAY 9 SAFETY AREA REQUIREMENTS

FIGURE: 5.3–1

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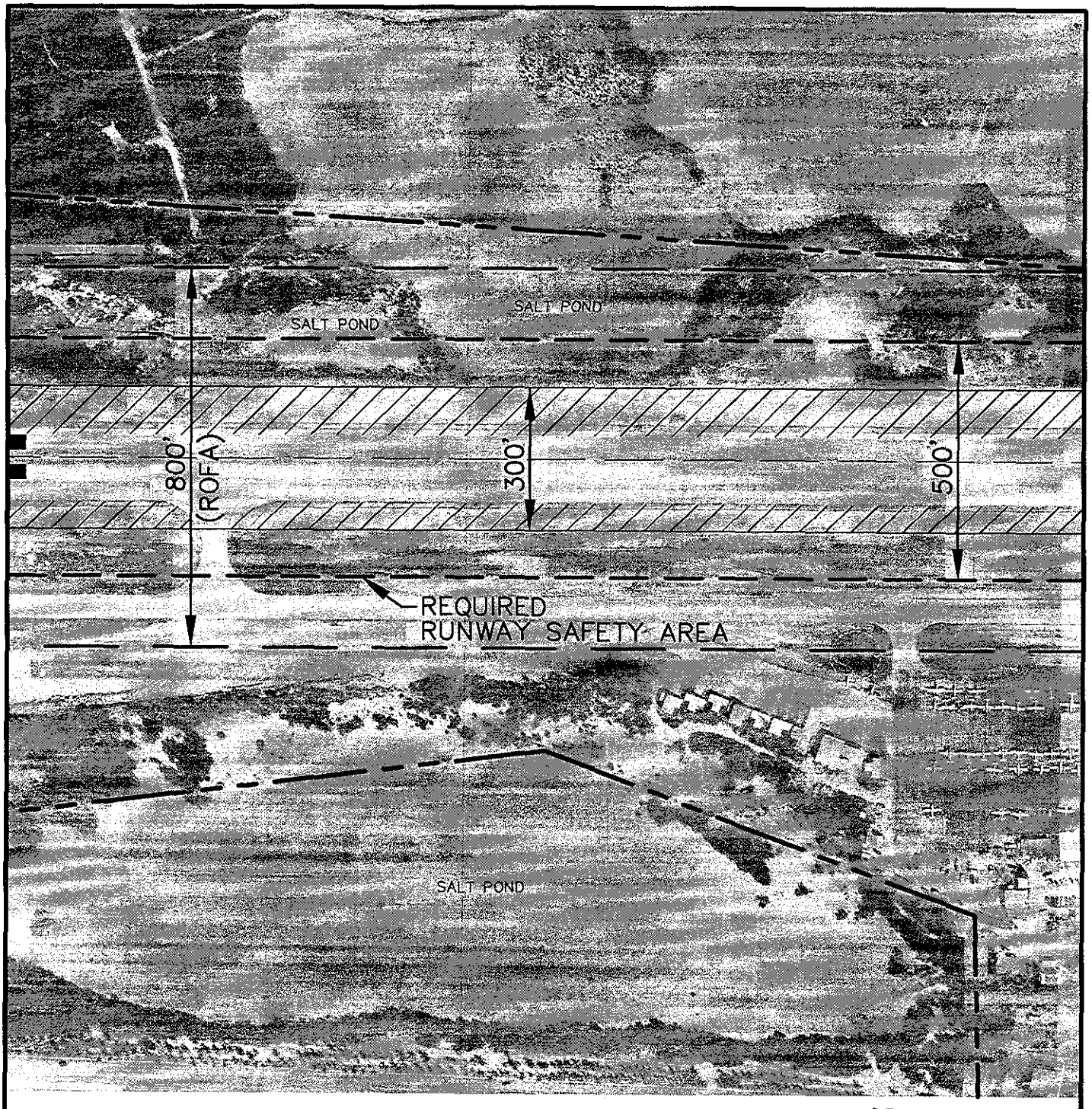

LEGEND

- AIRPORT PROPERTY LINE
- REQUIRED RUNWAY SAFETY AREA (RSA)
- REQUIRED RUNWAY OBJECT FREE AREA (ROFA)
- EXISTING RUNWAY SAFETY AREA

N

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GRAPHIC SCALE IN FEET

Key West International Airport
RSA Feasibility Study

RUNWAY 9-27 SAFETY AREA REQUIREMENTS

FIGURE: 5.3–2

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LEGEND

- AIRPORT PROPERTY LINE
- REQUIRED RUNWAY SAFETY AREA (RSA)
- REQUIRED RUNWAY OBJECT FREE AREA (ROFA)
- EXISTING RUNWAY SAFETY AREA

N

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GRAPHIC SCALE IN FEET

Key West International Airport
RSA Feasibility Study

RUNWAY 27 SAFETY AREA REQUIREMENTS

FIGURE: 5.3–3

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In regard to RSA determinations, the order states: "When making determinations about the practicability of obtaining the RSA, the first attempt shall consist of investigating fully the possibility of obtaining an RSA that meets the current standards through a traditional graded area surrounding the runway." (FAA Order 5200.8).

A *Runway Safety Area Study* was prepared in March of 2001 for KWIA. However, the FAA has requested further investigation of the feasibility of implementing a standard RSA at KWIA. That request has resulted in the preparation of this study.

5.5 Proposed Runway Safety Area Improvements

The proposed improvements to the RSA considered in this study consist of constructing a standard, graded RSA conforming to the design standards contained in FAA AC 150/5300-13. The dimension of the RSA would be 500 feet wide and extend 1,000 feet beyond each runway end. A diagram of the proposed RSA improvements is shown on Figures 5.5-1 and 5.5-2.

5.6 Runway Object Free Area Considerations

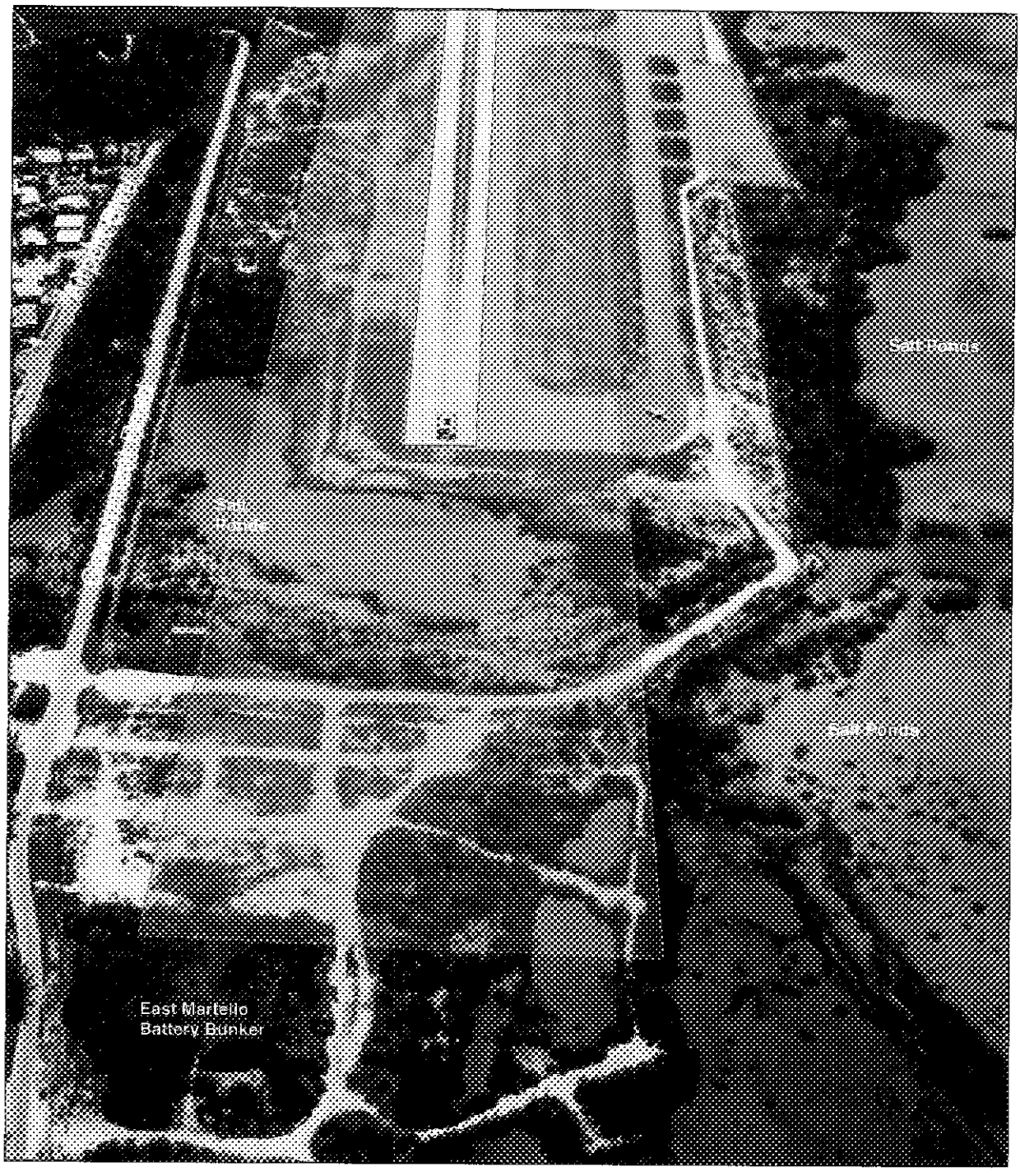
The C-III ARC also affects the implementation of the airport's runway Object Free Area (OFA). The OFA is an "area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes" (FAA AC 150/5300-13).

For a C-III ARC, the requirement for the runway OFA is 800 feet wide (centered on the runway centerline) and 1,000 feet beyond the each runway end. Buildings, structures, trees, and brush are usually removed from the OFA. There are no fill or grade requirements for the OFA.

At KWIA, the impact of implementing the runway OFA would be the additional clearing of approximately 14 acres of trees and brush. The area would be comprised of approximately 11.5 acres of mangrove and 2.5 acres of Brazilian pepper and Australian pine. It is anticipated that the clearing of trees and brush would be accomplished manually without the use of heavy equipment in wetlands. The effect, however, would be the removal of some habitat provided by the trees and vegetation in the OFA.

In order to minimize impacts at KWIA in regard to proposed safety improvements, the FAA is willing to consider a Modification of Standards to the OFA to allow the OFA at the same dimensions as the required RSA, provided that the County provides documentation that the reduced OFA has an acceptable level of safety. The result would be an OFA that is 500 feet wide by 1,000 feet in length beyond each runway end.

The modification of the OFA is proposed since the OFA is a land clearance requirement, as opposed to the grading and construction requirement of an RSA that is needed to support an aircraft in the event of a runway excursion. The approval of the Modification of Standards would require an FAA finding that the proposed modification is safe for the specific site and conditions.



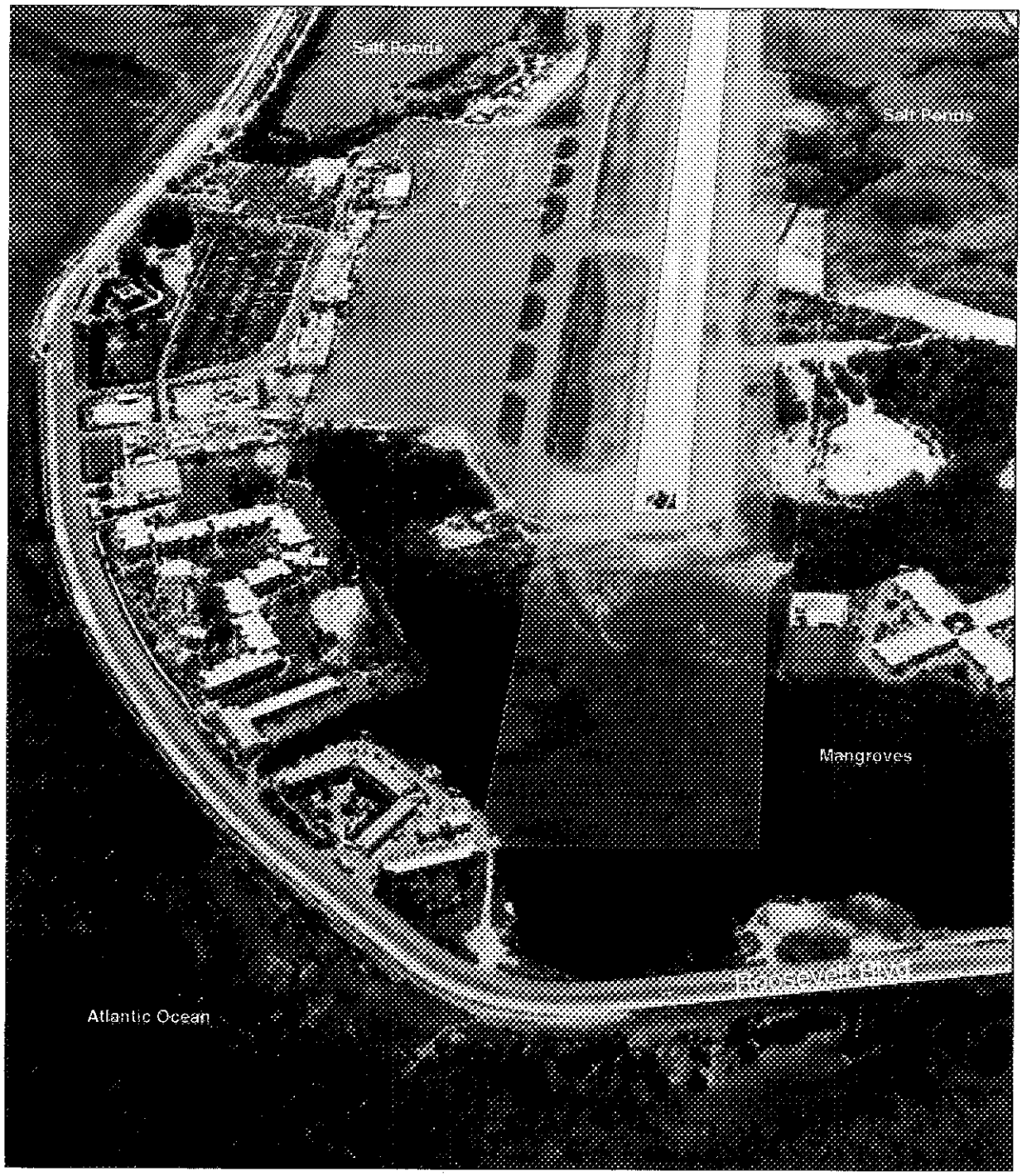
Scale Varies

N

LEGEND

Runway Safety Area

Runway Safety Area Feasibility Study **Key West International Airport**	**Proposed RSA on Runway 9 End**	**Figure:** **5.5-1**



Scale Varies

LEGEND

Runway Safety Area

N

Runway Safety Area Feasibility Study

Key West International Airport

Proposed RSA on Runway 27 End

Figure: 5.5-2

5.7 Project Alternatives

In accordance with the Runway Safety Area Program and the FAA's priority commitment to safety, the FAA must first make a determination about the practicability of obtaining a RSA that meets design standards through a traditional graded area around the runway. As such, the scope of this study is limited to consideration of the standard RSA.

If it is found that the standard RSA is not practicable, the FAA may then evaluate options and alternatives that would improve safety at the KWIA through a non-standard RSA. During the course of any NEPA-related environmental documentation and permit application process, a detailed evaluation of alternatives, including the No-Action Alternative, would be conducted.

5.8 Estimated RSA Construction Cost

The estimated probable construction cost for the standard RSA at KWIA is $9,161,200 (URS, 2003). This amount includes probable costs for construction, design fees, and construction phase services. This cost estimate does not include mitigation. Mitigation costs will be discussed in subsequent sections of this report. A copy of the RSA construction cost estimate is included in Appendix C.

5.9 Anticipated Project Impacts

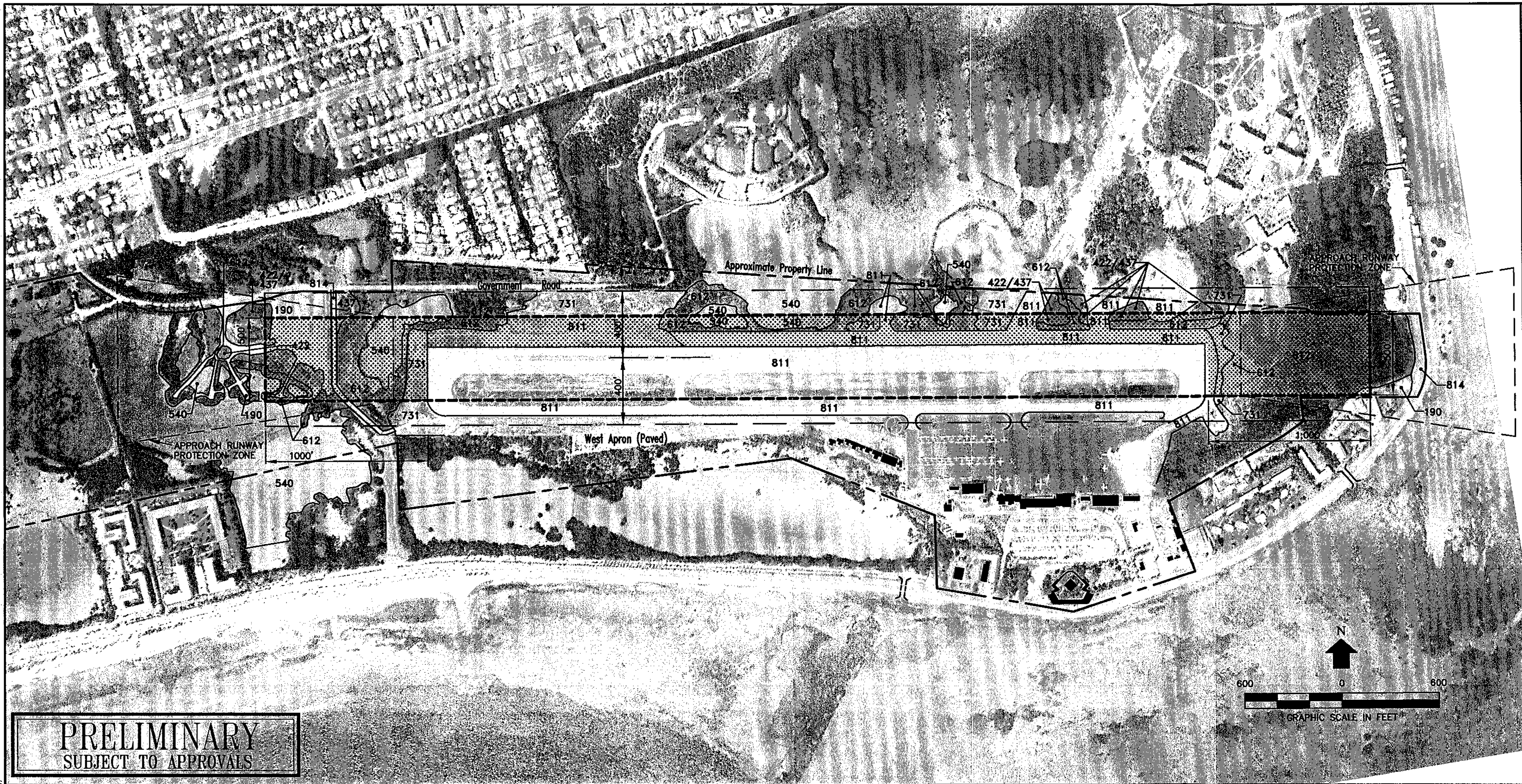
Three wetland types would be impacted by the construction of the RSA: mangrove wetlands, salt ponds, and exposed cap rock. The impacts would be caused by grading and filling activities associated with the development of the RSA. The construction of a standard RSA at the KWIA is projected to impact approximately 24.9 acres of wetlands. The 24.9 acres identified differs from the 31.0 acres referenced in the Master Plan Update and the materials prepared at the outset of this study. During the course of this feasibility study, coordination and a site visit was conducted with the South Florida Water Management District. Based on discussions with District staff, an area of exposed rock along the north side of the runway would likely not be considered wetland. As such, approximately 6.1 acres of land classified as Exposed Rock/Marsh Grass wetland was reclassified as non-wetland airport property. It should be noted that a comprehensive delineation and inventory of wetland resources on airport property has not been conducted. The potential wetland impacts identified for this study were delineated from aerial photography and verified on the ground. Formal delineations and approvals by permitting agencies will be required for the permit application process.

Table 5.9-1 summarizes the anticipated wetland impacts. Figure 5.9-1 shows the locations of the wetlands and their Florida Land Use, Cover, and Forms Classifications (FLUCFCS) designations.

TABLE 5.9-1
POTENTIAL STANDARD RSA WETLAND IMPACTS

Wetland Classification	FLUCFCS Code	Approximate Area Impacted (acres)
Bays and Estuaries	540	3.9
Mangrove Swamps	612	17.3
Exposed Rock/Marsh Grass	731	3.7
Total		**24.9**

Source: URS Corporation, 2003.



PRELIMINARY PROJECTED RSA IMPACTS (ACRES)	
FLUCFCS CODE	TOTAL
190	2.6
422/437	2.2
540*	3.9
612*	17.3
731*	3.7
811	13.3
814	0.4
TOTAL	43.4

* PROJECTED WETLAND IMPACTS = 24.9 ACRES

FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION SYSTEM (FLUCFCS)

190	OPEN LAND
422/437	BRAZILIAN PEPPER/ AUSTRALIAN PINE
540	BAYS AND ESTUARIES
612	MANGROVE SWAMPS
731	EXPOSED ROCK WITH MARSH GRASSES
811	AIRPORT
814	ROADS AND HIGHWAYS

LEGEND

- AIRPORT PROPERTY LINE
- EXISTING AIRPORT BUILDINGS
- REQUIRED RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- APPROACH RUNWAY PROTECTION ZONE
- AREA OF PROJECTED DIRECT IMPACT

FIGURE 5.9–1

KEY WEST INTERNATIONAL AIRPORT RUNWAY SAFETY AREA FEASIBILITY STUDY

PROPOSED RSA AND IMPACT AREAS

DESIGN BY:	RRS
DRAWN BY:	KFS
CHECKED BY:	GGF
DATE:	6–11–02

DATE	REVISIONS

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
No. 00000002

6 0 AGENCY COORDINATION

6.0 AGENCY COORDINATION

6.1 Agency Contact and Coordination

It was recognized at an early stage of this study that the development of a standard RSA could have substantial wetland impacts. Consequently, input from permitting and commenting agencies would be of paramount importance as to the feasibility of this project. To that end, agency coordination was initiated early and maintained throughout the study. Key events and dates are listed in Table 6.1-1.

6.2 Agency Issues and Concerns

Key topics that evolved from these coordination efforts are summarized below. The issues and concerns were considered in the formulation of conceptual mitigation strategies. However, certain requests for detailed impact studies and alternatives analyses are beyond the scope of the current study. These would have to be definitively addressed in any subsequent action (NEPA EA/EIS and resource permit applications) for the RSA project. A summary of the agency issues and concerns is presented below.

Alternatives to Avoid / Minimize Impacts

The need to first avoid and then minimize potential impacts to the salt ponds and wetland resources are critical to the permitting process. All of the participating Agencies reiterated the need to evaluate alternatives to the proposed action that avoid or minimize impacts. If no alternatives are considered feasible or practicable, then the applicant will need to document the reason that alternatives with lesser impacts were not selected. The intent of the agency's alternative review process is to avoid and minimize resource impacts to the greatest extent practicable.

During the course of this study, it was noted that the FAA, by regulation, must first fully evaluate the practicability of the standard RSA before a less-than-standard RSA can be considered. If it is determined that the standard RSA is not practicable, then the FAA will evaluate available options to provide additional RSA at the KWIA and improve safety. In any case, the detailed evaluation of alternatives would be required for any subsequent NEPA documentation and permit application process.

Secondary and Cumulative Impacts

In addition to the alternatives analyses, cumulative impacts would likely be a significant topic in the project's evaluation during the NEPA and permit application process. Although the proposed RSA is needed for existing conditions and has independent utility from other potential airport development projects, the participating agencies were concerned with potential secondary and cumulative impacts, which may include: extension of the runway, increased flight operations and aircraft size, influx of tourists, and the resultant demands that might be placed on the City's infrastructure. Other concerns were the isolation of wetlands and water quality impacts.

TABLE 6.1-1
AGENCY CONTACT AND COORDINATION

Date	Event
07-17-02	City of Key West provides Monroe County copy of Resolution 20-222 encouraging Monroe County to address runway safety issues.
9-26-02	URS provides invitation letters and a "Project Information Package" to the following agencies as preparation for a pre-application meeting in October 2002. • U.S. Army Corps of Engineers (ACOE) • U.S. Fish and Wildlife Service (FWS) • National Marine Fisheries Service (NMFS) • South Florida Water Management District (SFWMD)
10-09-02	An agency coordination meeting was held at the SFWMD office in West Palm Beach, Florida. Attendees included: • ACOE by teleconference • NMFS • FWS • SFWMD • FAA • URS Purpose of meeting was to discuss the proposed project and scope of the feasibility study and to initiate dialogue on potential impacts and conceptual mitigation strategies. The agencies were invited to provide comments and concerns related to the proposed project. Meeting minutes and related materials are in Appendix B.
10-10-02	ACOE provides comments on 10-09-02 meeting by e-mail.
10-17-02	USFWS and URS conduct field reviews of KWIA property.
10-23-02	URS provides informational packet to U.S. Environmental Protection Agency (EPA) in the Atlanta, GA and Marathon, FL offices.
10-28-02	NMFS provides comments on the 10-09-02 meeting by mail.
11-07-02	SFWMD provides comments on the 10-09-02 meeting by mail.
11-20-02	EPA provides comments on the 10-23-02 packet by mail.
12-05-02	An agency coordination meeting and site visit was conducted at KWIA. The attendees were: • ACOE • FWS • NMFS • FAA • KWIA • URS The purpose of the meeting was to review the submitted agency comments and URS responses; conduct a field review of the proposed impact site; and further discuss conceptual mitigation strategies. URS was to subsequently identify conceptual mitigation strategies. Meeting minutes and related materials are included in Appendix B.
01-13-03	URS contacts by letter the Florida Division of Historical Resources concerning potential removal of bunker located on airport property.
01-16-03	URS contacts by phone the above agency and discusses limitations for removing the bunker.
01-29-03 through 01-31-03	URS meets with representatives and staff of Monroe County, the City of Key West, U.S. Fish and Wildlife Service, National Key Deer Refuge, and Florida Fish and Wildlife Conservation Commission to identify and review potential mitigation sites. Telephone contact is made with additional agencies and organizations regarding potential mitigation opportunities.
01-31-03	SFWMD conducts project site visit at KWIA.
02-20-03	An agency coordination meeting was held at the SFWMD office in West Palm Beach, Florida. URS provides a handout of potential mitigation sites. Attendees included: • ACOE by teleconference • NMFS by teleconference • SFWMD • FAA • URS Purpose of meeting was to present and discuss the preliminary conceptual mitigation projects and strategies (i.e., mitigation ratios) for the RSA project. Meeting minutes and related materials are included in Appendix B.
3-04-03	City of Key West provides URS suggested habitat and water quality projects the City would like to see implemented.

Unique Salt Pond Habitat

The agencies and the City of Key West indicated the RSA would impact the last remaining salt ponds in Key West. The salt ponds are considered a unique and valuable natural resource in the City of Key West.

Mangroves and Open Water Habitat

The RSA project would impact the last substantial mangrove and open water habitat on Key West. Impacts to these habitats would require extensive mitigation, preferably as close to the impact area as possible. Providing off-site mitigation and mitigation at locations several keys up from Key West would be considered if it was demonstrated that on-site mitigation will be fully utilized.

Essential Fish Habitat / Habitat of Special Concern / National Marine Sanctuary

The NMFS identified the wetlands affected by the proposed RSA project as Essential Fish Habitat and a Habitat of Special Concern. The NMFS expressed concern over potential impacts to these designated areas and related fisheries resources. Additional studies would be required to evaluate potential impacts to the affected resources.

Endangered Species

Based on early project coordination and field reviews, it is unlikely the RSA project would have an adverse impact on listed protected species. Although impacts are not expected to occur, more detailed fieldwork would have to be conducted to establish the potential for occurrence of (or lack of) the following species:

- Rice Rat (*Oryzomys palustris natator argentatus*), Federal status = Endangered;
- Lower Keys Rabbit (a.k.a., marsh rabbit) (*Sylvilagus palustris hefneri*) Federal status = Endangered; and
- Stock Island Tree Snail (*Orthalicus reses* (not including *nesadryas*)), Federal Status = Threatened

Local and Migratory Birds

Concern for habitat loss and its potential effect on bird communities was expressed. The project will need to be evaluated for potential impacts to local and migratory bird species.

Water Quality/Hydrology

The effect the RSA may have on the hydrology and water quality of surrounding wetlands and salt ponds is of concern to the permitting agencies. These issues will have to be addressed in detail if the project advances. Additionally, the designation of the Florida Keys as an Area of Critical State Concern and as having Outstanding Florida Waters provides an emphasis on maintaining water quality in the Florida Keys area.

Apparent Lack of Mitigation Sites and Opportunities

Based on conversations with several key land holding agencies, there is an apparent shortage of uplands available for sale to use as wetland mitigation sites. Since land is a scarce commodity in the Keys and commands a high price per acre, large-scale mitigation projects may be cost-prohibitive.

East Martello Battery Bunker

The RSA project would have the potential to impact a portion of the East Martello Battery Bunker. The bunker is a Cold War-era missile command bunker that is on property deeded to the County from the Department of Defense. According to the quitclaim deed (dated August 8, 2000) transferring the federal property to the Monroe County Board of County Commissioners, the property is eligible for listing in the National Register of Historic Places. In the agreement, the County agrees to preserve and maintain the attributes that contribute to the eligibility of the East Martello Battery Bunker. The significance of the bunker and its eligibility status would have to be determined in subsequent studies. Removal or alteration of the bunker would require coordination with and approval from the State Historic Preservation Officer.

Early coordination with the Florida Department of State, Division of Historic Resources indicates that the agency has a "strong feeling" toward preservation of the bunker due to its importance to the State's military history. The agency would prefer alternatives that would avoid and/or minimize impacts to the bunker. The agency may consider a proposal to alter or remove the bunker if strong justification is presented for the RSA and environmental mitigation needs. The justification should address avoidance and minimization issues. The agency could not comment on the likelihood of approval/disapproval of a proposal until formal coordination and a detailed plan and study is presented.

7 0 CONCEPTUAL MITIGATION STRATEGIES AND COSTS

7.0 CONCEPTUAL MITIGATION STRATEGIES AND COSTS

7.1 Permits and Approvals

7.1.1 State Permits and Approval

The construction of a standard RSA would require approval from the South Florida Water Management District (SFWMD) in the form of an Environmental Resource Permit (ERP) for wetland impacts, surface water management, and water quality issues. Additionally, approval from the Board of Trustees of the Internal Improvement Trust Fund (TIITF) will be required for any of the proposed mitigation sites that involve state-owned submerged lands. State agencies that would have an opportunity to comment on the ERP application include the Florida Department of Environmental Protection (Coastal Zone Consistency), Florida Fish and Wildlife Conservation Commission (Protected Species), and the Florida Division of Historical Resources. Local agencies and the public would also have the opportunity to comment on the permit application and draft permit.

7.1.2 Federal Permits and Approvals

Wetland impacts associated with the proposed project would require a Section 404 dredge and fill permit issued by the U.S. Army Corps of Engineers (USACE). Federal agencies that would have an opportunity to comment on the permit application include the U.S. Environmental Protection Agency (wetland Impacts and water quality), U.S. Fish and Wildlife Service (Protected Species), National Marine Fisheries Services (Essential Fish Habitat), and the Florida Keys National Marine Sanctuary (Potential Impacts to the Sanctuary). Other state and local agencies, as well as the public, would also have the opportunity to comment on the permit application and draft permit.

7.2 Anticipated Project Impact Analysis

Three distinctly different wetland types would be impacted by the construction of the RSA: mangrove wetlands, salt ponds, and exposed cap rock. The construction of a standard RSA at KWIA is projected to impact approximately 24.9 acres of wetlands. The 24.9 acres identified differs from the 31.0 acres referenced in the Master Plan Update and the materials prepared at the outset of this study. During the course of this feasibility study, coordination and a site visit was conducted with the South Florida Water Management District. Based on discussions with District staff, an area of exposed rock along the north side of the runway would likely not be considered wetland. As such, approximately 6.1 acres of land classified as Exposed Rock/Marsh Grass wetland was reclassified as non-wetland airport property. It should be noted that a comprehensive delineation and inventory of wetland resources on airport property has not been conducted to date, nor approved by permitting agencies. The potential wetland impacts identified for this study were delineated from aerial photography and verified on the ground.

Approximately 17.3 acres of mangrove wetlands (FLUCFCS Code 612) would be impacted by the proposed RSA project. These wetlands occur to the east, west, and north of the existing runway. Because of safety concerns, Monroe County has received a permit from the Florida Department of Environmental Protection to trim and alter mangroves north of the runway and the east-west approaches to the runway. In addition, this permit allows for line-of-sight clearing and trimming of all vegetation to

provide unrestricted visibility from the airport control tower to the West Apron and the vicinity of the west runway.

A mature mangrove swamp is located directly east of Runway 27. This area is dominated by black (*Avicennia germinans*), white (*Laguncularia racemosa*), and red mangroves (*Rhizophora mangle*) that vary from 12 to 30 feet in height. Mangroves located on the western edge of this swamp have been trimmed to approximately 3 to 4 feet in height. A scrub mangrove system located to the west of Runway 9 has also been trimmed to approximately 3 to 4 feet in height. Mangroves located to the north of the runway have been altered with the permission of DEP to a height of less than 1 foot.

Salt ponds (FLUCFCS Code 540) are located to the north and west of the existing runway. The salt pond areas that would be impacted by the RSA project are open water areas typically surrounded by small mangroves. The salt ponds located to the north of the runway is tidally connected to the Riviera Canal and thus Cow Key Channel, while the salt pond located immediately to the west of Runway 9 is an isolated system and likely is subjected to tidal flushing only during storm tides. Approximately 3.9 acres of salt pond wetlands would be impacted by the proposed RSA project.

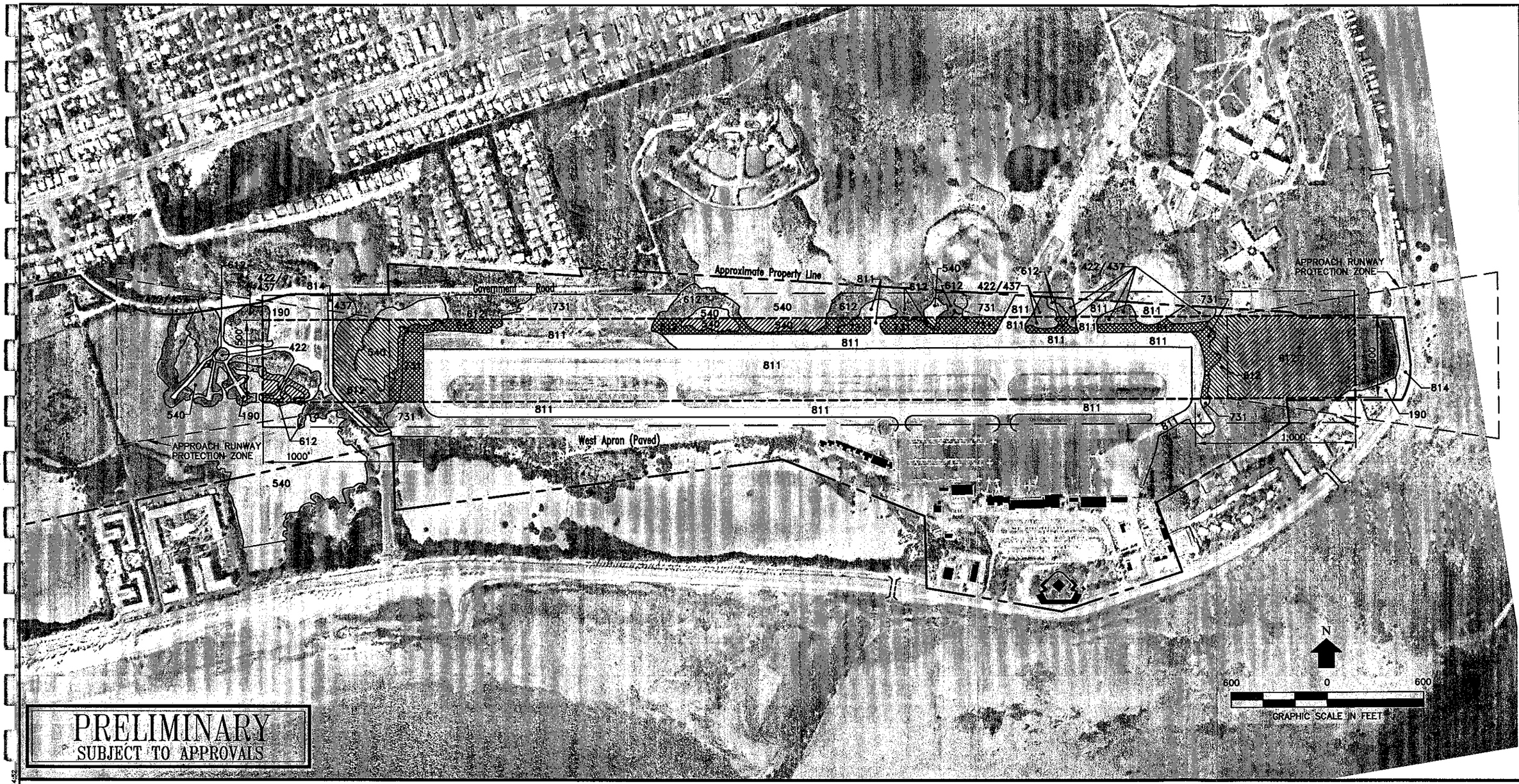
Areas of exposed cap rock (FLUCFCS Code 731) vegetated with patches of salt grass (*Monanthochloe littoralis*) are located at the runway ends and in pockets along the north edge of the runway. These areas are infrequently inundated by tides and offer little diversity of habitat. Approximately 3.7 acres of exposed cap rock would be impacted by the proposed project.

As part of this feasibility study, the wetland resources at KWIA have been identified and generally categorized as being of high, medium or low quality by URS environmental scientists. Consensus and agreement by permitting agencies would be required on this matter and would be coordinated through the permitting process.

Mangrove wetlands that have only been trimmed for safety reasons in the Runway Protection Zone (RPZ) and that provide the best habitat for wildlife have been designated as being of high quality. Currently, these vary in height from 12 to 30 feet. Mangrove wetlands that have been trimmed to a minimum height of approximately 2 feet above the ground have been designated as medium quality. Mangrove wetlands that have been trimmed to the ground have been designated as low quality.

Open water salt pond wetlands that support diverse wetland vegetation such as mangrove and seagrass communities have been designated as high quality, while salt pond wetlands that lack diversity have been designated as medium quality. Tidally influenced areas of cap rock that support patches of wetland grasses have been designated as being of low quality. See Figure 7.2-1 for habitat quality designations. Photographs of the mangrove and salt pond system are included in Appendix E.

Detailed assessments of habitat values have not been conducted as part of this study but would be conducted as part of the NEPA documentation and permit application process. Additionally, secondary impacts have not been addressed in detail in this study but would also be addressed through the NEPA review and permit application process.



HABITAT QUALITY RANKINGS
HIGH QUALITY
MEDIUM QUALITY
LOW QUALITY

PRELIMINARY PROJECTED RSA IMPACTS (ACRES)	
FLUCFCS CODE	TOTAL
190	2.6
422/437	2.2
540*	3.9
612*	17.3
731*	3.7
811	13.3
814	0.4
TOTAL	43.4

* TOTAL WETLAND = 24.9 ACRES.

FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION SYSTEM (FLUCFCS)	
190	OPEN LAND
422/437	BRAZILIAN PEPPER/ AUSTRALIAN PINE
540	BAYS AND ESTUARIES
612	MANGROVE SWAMPS
731	EXPOSED ROCK WITH MARSH GRASSES
811	AIRPORT
814	ROADS AND HIGHWAYS

LEGEND

- AIRPORT PROPERTY LINE
- EXISTING AIRPORT BUILDINGS
- REQUIRED RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- APPROACH RUNWAY PROTECTION ZONE

FIGURE 7.2–1

DATE	REVISIONS

HABITAT QUALITY DESIGNATIONS

KEY WEST INTERNATIONAL AIRPORT
RUNWAY SAFETY AREA
FEASIBILITY STUDY

DESIGN BY:	RRS
DRAWN BY:	KFS
CHECKED BY:	GGF
DATE:	6-11-02

URS Corporation Southern
7650 West Courtney
Campbell Drive, Suite 400
Tampa FL 33607-1462
No. 00000002
URS

7.3 Anticipated Mitigation Ratios

Mitigation ratios that are typically required by the SFWMD to compensate for unavoidable wetland impacts are found in the District's *Basis of Review for Environmental Resource Permits* (SFWMD, 2002). Pursuant to the criteria in this document, acceptable ratios of wetland creation/restoration for impacts to mangrove wetlands range from 2:1 to 5:1; and 1.5:1 to 4:1 for impacts to salt ponds and cap rock wetlands. Acceptable ratios for enhancement of wetlands range from 4:1 to 20:1, while acceptable ratios for wetland preservation range from 20:1 to 60:1. See Table 7.3-1 for ranges of wetland creation mitigation acreages that may be required for the proposed project.

TABLE 7.3-1

RANGE OF POTENTIAL MITIGATION ACREAGE THAT COULD BE REQUIRED BY SFWMD

Permanent Impact		SFWMD							
		Restoration/Creation Ratios						Enhancement Ratios	
Habitat Type	Acres	Mangrove		Exposed Rock/ Salt Marsh		Salt Pond		Mangrove/Salt Marsh	
		2:1	5:1	1.5:1	4:1	1.5:1	4:1	4:1	20:1
Mangrove	17.3	34.6	86.5					69.2	346
Salt Pond	3.9					5.9	15.6	15.6	78
Cap Rock	3.7			5.6	14.8			14.8	74
Totals	**24.9**	**34.6**	**86.5**	**5.6**	**14.8**	**5.9**	**15.6**	**99.6**	**498**

Source: URS Corporation, 2003.

During an agency coordination meeting held on February 20, 2003, with the Water Management District, USACE and the National Marine Fisheries Service (NMFS), and Water Management District staff gave general guidance on what may be considered acceptable ratios for impacts to mangrove wetlands. However, formal agreement on ratios will be developed during a subsequent permit application process. The Water Management District staff indicated that, based on current information, a 5:1 ratio for high quality mangrove areas, a 3:1 ratio for medium quality mangrove areas, and a 2:1 ratio for low quality mangrove areas may be acceptable if the impacts are deemed unavoidable (see Table 7.3-2).

At the meeting, the Water Management District staff did not offer specific information on what would be considered acceptable ratios for salt pond or cap rock wetlands. Both the Water Management District and USACE noted the unique habitat represented by the salt ponds. The uniqueness of the salt ponds will be a consideration when discussing appropriate mitigation ratios during the permit application process. Based on guidance found in the Water Management District's Basis of Review, and best available information, URS proposes a mitigation ratio of 3:1 for high quality salt ponds, 2:1 for medium quality salt ponds, and 1.5:1 for cap rock wetlands. These proposed ratios along with the ratios suggested by the Water Management District for mangrove impacts are used as a basis to determine if adequate potential mitigation opportunities exist to compensate for the proposed impacts.

Based on the ratios assumed by URS, approximately 77.8 acres of wetland creation would be required to compensate for the anticipated direct impacts. Table 7.3-2 summarizes the amount of wetland creation needed using these assumed ratios. These amounts are without the mitigation that might be required for

secondary impacts. Secondary impacts have not been quantified to date and most likely would only be identified during the NEPA documentation or permitting process.

The USACE would require a functional evaluation of wetland impacts and proposed mitigation to determine the amount of mitigation required for unavoidable wetland impacts. The type of functional analysis to be applied to this project would be determined and implemented in the application process; therefore, potential mitigation requirements of the USACE were assumed for this study. Experience with other wetland projects indicates that the final mitigation acreages required by USACE is generally similar to mitigation acreages required by Florida's Water Management Districts. Consequently, for this analysis, it was assumed that the amount of mitigation required by a Section 404 permit will be the same as required by the SFWMD.

TABLE 7.3-2
PROJECTED WETLAND IMPACTS AND POTENTIAL MITIGATION ACREAGES

Wetland Type (FLUCFCS)	Wetland Quality	Impact Acreage	Wetland Creation Ratios Range*	Assumed Mitigation Ratio for Wetland Creation**	Mitigation Acreage Assumed for Wetland Creation
Mangrove (612)	High	8.2	2:1 – 5:1	5:1	41.0
	Medium	3.5	2:1 – 5:1	3:1	10.5
	Low	5.6	2:1 – 5:1	2:1	11.2
Subtotal Mangrove		**17.3**			**62.7**
Salt Pond (540)	High	1.7	1.5:1– 4:1	3:1	5.1
	Medium	2.2	1.5:1 – 4:1	2:1	4.4
Subtotal Salt Pond		**3.9**			**9.5**
Cap Rock Wetland (731)	Low	3.7	1.5:1 – 4:1	1.5:1	5.6
Subtotal Cap Rock		**3.7**			**5.6**
Totals		**24.9**			**77.8**

* Ratios found in the SFWMD " Basis of Review of ERP Permits"
** Based on agency input at pre-application meetings
All acreages are preliminary and subject to change

7.4 Potential Mitigation Opportunities

URS has been tasked with exploring conceptual mitigation options to compensate for unavoidable wetland impacts. Potential mitigation sites were identified and mapped through the review of aerial photography of the lower Keys, site visits, and meetings and conversations with land management agencies. These sites were located, identified, mapped, and acreages calculated on aerial photographs ranging in scale from 1" = 100' to 1" = 500'. Sites that were readily accessible were field evaluated from January 29 to 31, 2003 for suitability and the type of mitigation that may be developed.

Agencies and organizations contacted concerning potential mitigation opportunities included the U.S. Fish and Wildlife Service (USFWS) National Key Deer Refuge, Florida Fish and Wildlife Conservation Commission (FFWCC), Florida Keys Restoration Trust Fund, Nature Conservancy, the Monroe County Land Authority, and the City of Key West. Agency and organization contacts should be maintained